

REMARKS

The application has been reviewed in light of the final Office Action dated February 14, 2006 and the Advisory Action dated June 21, 2006. Claims 21, 24, 27, 30, 33, 36, 39, 42, and 44-57 were pending, with claims 1-20, 22, 23, 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40, 41 and 43 having previously been canceled, without prejudice or disclaimer. By this Amendment, claims 33, 36, 39 and 42 have been canceled, without prejudice or disclaimer, and claim 51 has been amended to clarify the claimed invention thereof. Accordingly, claims 21, 24, 27, 30 and 44-57 are presented for reconsideration, with claims 21, 44, 47 and 51 being in independent form.

Claims 51-57 were rejected under 35 U.S.C. §112, first paragraph.

In response, claim 51 has been amended with particular attention to the points raised in the Office Action.

Withdrawal of the rejection under 35 U.S.C. §112, first paragraph is respectfully requested.

Claims 33 was objected to under 37 C.F.R. 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 36, 39, and 42 were rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

By this Amendment, claims 33, 36, 39 and 42 have been canceled, without prejudice or disclaimer.

Withdrawal of the objection under 37 C.F.R. 1.75(c) and rejection under 35 U.S.C. §112, second paragraph is respectfully requested.

Claims 51, 53, 54, and 57 were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U.S. Application Publication No. 2002/0110063 A1 (Yamada '063). Claims 51-57 were rejected under 35 U.S.C. § 103(a) as purportedly obvious over Yamada '063. Claims

51- 57 were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U.S. Application Publication No. 2001/0041240 A1 (Ito). Claims 51-57 were rejected under 35 U.S.C. § 103(a) as purportedly obvious over Ito. Claims 51-57 were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U.S. Patent No. 6,592,958 to Nakamura et al. (Nakamura '958). Claims 51-57 were rejected under 35 U.S.C. § 103(a) as purportedly obvious over U.S. Patent No. 6,169,722 to Kikukawa et al. (Kikukawa '722). Claims 51-57 were rejected under 35 U.S.C. § 103(a) as purportedly obvious over U.S. Patent No. 6,465,070 to Kikukawa et al. (Kikukawa '070).

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claim 51 is patentable over the cited art, for at least the following reasons.

This application claims the priority of Japanese patent applications nos. 2001-2258, 2001-5734 and 2001-57392, filed with the Japanese Patent Office on January 10, 2001, January 12, 2001 and March 1, 2001, respectively. Applicant maintains that the pending claims 51-57 of this U.S. application are supported by priority Japanese patent applications nos. 2001-2258 and 2001-5734 filed January 10, 2001 and January 12, 2001, respectively (hereinafter "the priority dates of claims 51-57").

In addition, this application and the invention claimed in this application are assigned to Ricoh Company, Ltd, Tokyo, Japan. The assignment of this application to Ricoh Company, Ltd, Tokyo, Japan has been recorded by the USPTO at Reel 12981, Frame 811.

Yamada '063 is a publication of U.S. application Serial No. 09/966,171 filed September 28, 2001. Therefore, the effective reference date of Yamada '063 as a Section 102(e) reference is September 28, 2001. Since the September 28, 2001 reference date of Yamada '063 is after the

priority dates of claims 51-57, Yamada '063 is not prior art to claims 51-57 of this application. In addition, U.S. application Serial No. 09/966,171 filed September 28, 2001 is assigned, like this application, to Ricoh Company, Ltd, Tokyo, Japan. The assignment of U.S. application Serial No. 09/966,171 to Ricoh Company, Ltd, Tokyo, Japan has been recorded by the USPTO at Reel 12552, Frame 945. Therefore, under 35 U.S.C. § 103(c), Yamada '063 does not preclude patentability of the invention claimed in this application.

Ito is a publication of U.S. application Serial No. 09/821,204 filed March 29, 2001. Therefore, the effective reference date of Ito as a Section 102(e) reference is March 29, 2001. Since the March 29, 2001 reference date of Ito is after the priority dates of claims 51-57, Ito is not prior art to claims 51-57 of this application. In addition, U.S. application Serial No. 09/821,204 filed March 29, 2001 is assigned, like this application, to Ricoh Company, Ltd, Tokyo, Japan. The assignment of U.S. application Serial No. 09/821,204 to Ricoh Company, Ltd, Tokyo, Japan has been recorded by the USPTO at Reel 11896, Frame 399. Therefore, under 35 U.S.C. § 103(c), Ito does not preclude patentability of the invention claimed in this application.

U.S. Patent No. 6,592,958 issued to Nakamura et al. from U.S. application Serial No. 09/863,472 filed May 24, 2001. Therefore, the effective reference date of Nakamura '958 as a Section 102(e) reference is May 24, 2001. Since the May 24, 2001 reference date of Nakamura '958 is after the priority dates of claims 51-57, Nakamura '958 is not prior art to claims 51-57 of this application. In addition, U.S. application Serial No. 09/863,472 filed May 24, 2001 is assigned, like this application, to Ricoh Company, Ltd, Tokyo, Japan. The assignment of U.S. application Serial No. 09/863,472 to Ricoh Company, Ltd, Tokyo, Japan has been recorded by the USPTO at Reel 12214, Frame 405. Therefore, under 35 U.S.C. § 103(c), Nakamura '958

does not preclude patentability of the invention claimed in this application.

U.S. Patent No. 6,465,070 issued to Kikukawa et al. from U.S. application Serial No. 09/760,847 filed January 17, 2001. Therefore, the effective reference date of Kikukawa '070 as a Section 102(e) reference is January 17, 2001. Since the January 17, 2001 reference date of Kikukawa '070 is after the priority dates of claims 51-57, Kikukawa '070 is not prior art to claims 51-57 of this application.

Example 3 of Kikukawa '722, as understood by Applicant, proposes a sample recording layer having the composition of $\text{Ag}_6\text{In}_4\text{Sb}_{62}\text{Te}_{28}$ (it should be noted that the sum of the components adds of course to 100%, and not to 98% as alleged in the Advisory Action). Kikukawa '722 also indicated that Ge may be added in an amount in the range of 0 to 2 at %.

However, when Ge is added, the percentages Ag, In, Sb and Te are decreased pro rata, and thus Ag_6 would become $\text{Ag}_{<6}$, In_4 would become $\text{In}_{<4}$, Sb_{62} would become $\text{Sb}_{<62}$, Te_{28} would become $\text{Te}_{<28}$. $\text{Ag}_6\text{In}_4\text{Sb}_{62}\text{Te}_{28}$, when an amount of Ge in the range of 0 to 2 at % is added thereto, would not become $\text{Ag}_6\text{In}_4\text{Sb}_{64}\text{Te}_{24}\text{Ge}_{0.5-2}$, as contended in the Office Action, wherein the percentage of Sb increases and the percentage of Te decreases by an amount (4%) greater than the percentage of Ge (0.5 to 2%). Indeed, $\text{Ag}_6\text{In}_4\text{Sb}_{64}\text{Te}_{24}\text{Ge}_{0.5-2}$ is not even possible since the sum of the percentages of the components is greater than 100%.

The Advisory Action contends that "there is direction to the Te and Sb contents", without citing support in the reference (further, it is not understood how Te and Sb contents can have "direction"). It is noted that if one skilled in the art is going to experiment with an entirely new composition by modifying those proposed in Kikukawa '722, an infinite number of different new compositions can be tried. Kikukawa '722 does not provided instruction or suggestion for modification that would lead one to modify $\text{Ag}_6\text{In}_4\text{Sb}_{62}\text{Te}_{28}$ to $\text{Ag}_6\text{In}_4\text{Sb}_{64}\text{Te}_{24}\text{Ge}_{0.5-2}$. If the

Examiner disagrees therewith, it is respectfully requested that the Examiner cite by column and lines numbers where basis for disagreement can be found in the cited reference.

Absent any such instruction or suggestion in Kikukawa '722, the contention in the Office Action to modify the composition of Example 3 of Kikukawa '722 (that is, $\text{Ag}_6\text{In}_4\text{Sb}_{62}\text{Te}_{28}$) arbitrarily to $\text{Ag}_6\text{In}_4\text{Sb}_{64}\text{Te}_{24}\text{Ge}_{0.5-2}$ is merely an indication of, if anything, obvious-to-try which is not relevant to the test of patentability under 35 U.S.C. §103.

Further, $\text{Ag}_6\text{In}_4\text{Sb}_{64}\text{Te}_{24}\text{Ge}_{0.5-2}$ is similar to Comparative Example 7 of the present application ($\text{Ag}_{5.5}\text{In}_{4.0}\text{Sb}_{63.0}\text{Te}_{26.5}\text{Ge}_{1.0}$). Although low speed (3.5 m/s) DOW (direct overwrite) recording can be performed on such a medium, high speed (12 m/s) DOW recording cannot be performed thereon (please refer to Tables 1-1 and 1-2). By controlling the content of Sb so as to fall in the range of 64% to 92%, unexpected effect (that is, unpredictably) can be produced.

Applicant does not find teaching or suggestion in the cited art of the optical recording medium of claim 51 of the present application, wherein the recording layer essentially consists of Ag, In, Sb, Te and Ge, with a proportion in atomic percent of a(Ag): b(In): c(Sb): d(Te): e(Ge), with $0.1 \leq a \leq 7$, $2 \leq b \leq 10$, $64 \leq c \leq 92$, $5 \leq d \leq 26$ and $0.3 \leq e \leq 3$, provided that $a + b + c + d + e \geq 97$.

Claims 51-57 were rejected under the judicially created doctrine of obviousness-type double patenting as purportedly unpatentable over claims 2, 4, 6, 7, 9, 11, and 13-14 of Nakamura. Claims 51-57 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14, 17-25 and 27-32 of U.S. patent application Serial No. 09/996171.

Contrary to the contention in the Office Action, there is no overlap as between claims 2, 4, 6, 7, 9, 11, and 13-14 of Nakamura and claims 51-57 of the present application, and there is

no overlap as between claims 1-14, 17-25 and 27-32 of U.S. patent application Serial No. 09/996171 and claims 51-57 of the present application.

None of the claims of Nakamura and none of the claims of U.S. patent application Serial No. 09/996171 discloses or suggests an optical recording medium, as described in claim 51 of the present application, wherein the recording layer essentially consists of Ag, In, Sb, Te and Ge, with a proportion in atomic percent of a(Ag): b(In): c(Sb): d(Te): e(Ge), with $0.1 \leq a \leq 7$, $2 \leq b \leq 10$, $64 \leq c \leq 92$, $5 \leq d \leq 26$ and $0.3 \leq e \leq 3$, provided that $a + b + c + d + e \geq 97$.

Claims 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by European Application No. 0 717 404 (Yamada '404). Claims 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by European Application No. 0 735 158 (Yamada '158). Claims 21, 24, 27, 30, 33, 36, 39, 42, and 49-50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Japanese Application Publication No. 03-240590 (Iwasaki '590). Claims 21, 24, 27, 30, 33, 36, 39, 42, and 49-50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Japanese Application Publication No. 04-078031 (Iwasaki '031). Claims 21, 24, 27, 30, 33, 36, 39, 42, and 49-50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Japanese Application Publication No. 11-070737 (Yuzurihara). Claims 21, 24, 27, 30, 33, 36, 39, 42, 49-54, and 57 were rejected under 35 U.S.C. § 102(a) as purportedly anticipated by Japanese Application Publication No. 2002-002116 (Miura '116). Claims 21, 24, 27, 30, 33, 36, 39, 42, and 50 were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U.S. Patent No. 6,479,121 to Miura et al. (Miura '121). Claims 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by European Patent Application No.

0 847 049 to Ohno et al. Claims 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by U.S. Patent No. 6,294,310 to Ohno et al. Claims 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by U.S. Patent No. 6,242,157 to Tominaga et al. Claims 21, 24, 27, 30, 33, 36, 39, 42, and 49-50 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over one of Yamada '404, Yamada '158, Iwasaki or Yuzurihara in view of U.S. Patent No. 6,609,175 to Ando et al. and one of European Patent No. 1 111 598 (Suzuki '598) or U.S. Patent No. 6,621,780 to Suzuki et al. (Suzuki '780).

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 21, 44 and 47 are patentable over the cited art, for at least the following reasons.

For example, independent claim 21 of the present application is directed to a rewritable phase-change optical recording medium which is initialized by irradiating the recording medium with a scanning beam spot emitted from a high power semiconductor laser device, wherein an energy density input by the beam spot is in a range of 600 J/m^2 to 1000 J/m^2 .

None of the cited references discloses or suggests such an initialized phase-change optical recording medium.

The Office Action states that "all the media cited have been initialized and that these initializations are equivalent to that recited in the claims". The Office Action equates the approaches of the cited references which result with jitter properties similar to those of the initialized phase-change optical recording medium of claim 21.

However, the test of patentability under 35 U.S.C. 102 and 103 is not whether the prior art is equivalent to the claimed invention or whether the prior art can achieve the same or an

equivalent result as that can be obtained through the claimed invention, but rather that the claimed invention is anticipated by or rendered obvious by the prior art. It is also well-established that a prima facie case of unpatentability under 35 U.S.C. 102 and 103 is not made if assumptions about the prior art must be made to cure that which is not disclosed therein or if that which is taught in the subject application must be used to fill holes in the prior art.

Therefore, the rejections based on, for example, Ohno '049, Ohno '310 and Tominaga are not supported by a prima facie case, since multiple assumptions must be made to reach the conclusions stated in the Office Action.

The Office Action simply does not cite to any teaching or suggestion in the cited references of a rewritable phase-change optical recording medium which is initialized by irradiating the recording medium with a scanning beam spot emitted from a high power semiconductor laser device, wherein an energy density input by the beam spot is in a range of 600 J/m² to 1000 J/m².

Further, the Office Action (paragraph bridging pages 10-11) indicates that the Examiner calculated the irradiation energy as a product of (laser power) x (irradiation time) x (area of cross section of laser beam), but was not able to reproduce the E values in Table 4 of the application. The Examiner invited applicant to clarify.

In the present application, the laser power is defined as that at the irradiation point. Therefore, the laser power has no loss. The cross section of the laser beam has a rectangle form of 1 μm x 100 μm. Therefore, the area is 100 μm². Since the laser beam is spirally scanned on the medium such at the longitudinal direction of the laser beam extends to the radial direction of the medium, while the beam spot is moved in a radial direction by 60 μm/rotation. See the figure in page 2. Therefore, the irradiation time is (1x10⁻⁶m) / (5 m/s). Accordingly, the irradiation

energy is as follows: $(330 \times 10^{-3} \text{ W}) \times ((1 \times 10^{-6} \text{ m}) / (5 \text{ m/s})) \times (100 \times 10^{-12} \text{ m}^2) = 660 \text{ J/m}^2$ (as reported in the application).

The Advisory Action states that the beam has an oval form as illustrated in Fig. 3 of the application and therefore applicant's calculation is not correct.

The Examiner is referred to the equation and corresponding description at page 31, lines 8-12. From the equation, it can be determined that $S = W_t \cdot W_r$.

Independent claim 44 is directed to a phase-change optical recording medium comprising a recording layer which contains information recorded in advance therein corresponding to S and R values for selecting an optimum recording power.

The cited art does not disclose or suggest a phase-change optical recording medium which includes such information stored therein.

The Office Action demonstrates a failure to understand the claimed invention. It is information corresponding to S and R values for selecting an optimum recording power that is recorded in advance therein, and the stored information is described in the claim.

Independent claim 47 is directed to a phase-change optical recording medium comprising a recording layer which contains information regarding a P_t value recorded in advance therein, the P_t value corresponding to an optimum recording power.

The cited art does not disclose or suggest a phase-change optical recording medium which includes such information stored therein.

Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 21, 44, 47, and 51, and the claims depending therefrom, are patentable over the cited art.

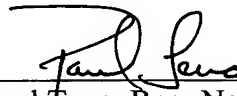
In view of the amendments to the claims and remarks hereinabove, Applicant submits that

the application is now in condition for allowance. Accordingly, Applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that may be required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul Teng", is written over a horizontal line.

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